



UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

21 March 2002

David Williams
Administrative Office of the United State Courts
District Court Administration Division
One Columbus Circle
Washington, DC 20544

Dear Mr. Williams:

This is in response to your request to examine the performance of the algorithm (specified in Section J, attachment 13, of the contract USCA-98-002) that is used in the juror selection process. That algorithm was originally developed at the National Institute of Standards and Technology (NIST) by Dr. James L. Blue.

After examining the performance of the pseudo-random number generator that is the basis for this algorithm leads to the conclusion that: **Under a definition of fair selection in which each possible candidate has an equal chance to be selected for a jury pool, this algorithm is adequate.**

- This pseudo-random number generator (algorithm used in jury selection) is a theoretically sound 31-bit generator.

During the intervening years since the development of that algorithm, NIST has also developed a test suite for random number generation algorithms, which is designed for testing a randomness of a binary sequence (i.e., a sequence of random 0s and 1s). Since the algorithm utilized in jury selection is required to produce a subset of N integers, methods in the NIST test suite were adapted for this algorithm for those methods that allowed adaptation.

- Based on a simulation study, this algorithm used in jury selection passed nine well-known tests for randomness that are in this test suite.

In addition, another large simulation compared the selection frequencies for independent replications of the selection process to the theoretical frequencies when all candidates are given exactly equal probabilities of selection.

- The simulation using the algorithm reproduced the theoretical frequencies very closely, with no statistically significant differences.

Sincerely,

A handwritten signature in black ink, appearing to read "Nell Sedransk".

Nell Sedransk, Ph.D.
Chief, Statistical Engineering Division